

Appl. No. 10/654,556
Amdt. dated March 21, 2006
Reply to Office Action of February 17, 2006

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.-15. (Canceled)

16. (Currently Amended) A fibrous sheet having first and second outer surfaces, wherein at least one outer surface comprises a topically-applied network of a cured binder composition resulting essentially from the cross-linking reaction of an epoxy-reactive polymer and an epoxy-functional polymer having about 10 or more pendant epoxy moieties, wherein the amount of the epoxy-functional polymer relative to the amount of the epoxy-reactive polymer is from about 0.5 to about 200 dry weight percent.

17. (Original) The sheet of claim 16 wherein the cured binder composition resides on only one outer surface.

18. (Original) The sheet of claim 16 wherein the cured binder composition resides on both outer surfaces.

19. (Original) The sheet of claim 18 wherein the cured binder composition on the first outer surface is different than the cured binder composition on the second outer surface.

20. (Original) The sheet of claim 18 wherein the network of the cured binder composition on the first outer surface is deposited in a pattern that is different than the network of the cured binder composition on the second outer surface.

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21. (Original) The sheet of claim 18 wherein the cured binder composition on the first outer surface is different than the cured binder composition on the second outer surface and wherein the network of the cured binder composition on the first outer surface is deposited in a pattern that is different than the network of the cured binder composition on the second outer surface.
22. (Currently Amended) The sheet of claim 16 wherein the topically-applied network of the cured binder composition network is a printed pattern of regularly spaced-apart deposits.
23. (Currently Amended) The sheet of claim 16 wherein the topically-applied network of the cured binder composition network is a sprayed pattern of randomly-spaced deposits.
24. (Original) The sheet of claim 16 wherein the surface area coverage of the binder is from about 5 to about 90 percent.
25. (Original) The sheet of claim 16 wherein the sheet is formed by air-laying.
26. (Original) The sheet of claim 16 wherein the sheet is formed by wet-laying.
27. (Original) The sheet of claim 16 wherein the cross-machine direction wet/dry tensile strength ratio increased about 30 percent or greater within 14 days of manufacture.
28. (Original) The sheet of claim 16 wherein the cross-machine direction wet/dry tensile strength ratio increased about 50 percent or greater within 14 days of manufacture.
29. (Original) The sheet of claim 16 wherein the cross-machine direction wet/dry tensile strength ratio increased about 70 percent or greater within 14 days of manufacture.

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30. (Currently Amended) A multi-ply paper towel comprising two outer plies, each of which has an outer surface and an inner surface, wherein one or both outer surfaces comprise a topically-applied network of a cured binder composition resulting essentially from the cross-linking reaction of an epoxy-reactive polymer and an epoxy-functional polymer having about 10 or more pendant epoxy moieties, wherein the amount of the epoxy-functional polymer relative to the amount of the epoxy-reactive polymer is from about 0.5 to about 200 dry weight percent.

31. (Original) The paper towel of claim 30 consisting of two plies and having a first outer surface and a second outer surface.

32. (Original) The paper towel of claim 31 wherein both outer surfaces comprise a topically-applied network of a cured binder composition.

33. (Original) The paper towel of claim 32 wherein the cured binder composition on the first outer surface is different than the cured binder composition on the second outer surface.

34. (Original) The paper towel of claim 32 wherein the network of the cured binder composition on the first outer surface is deposited in a pattern that is different than the network of the cured binder composition on the second outer surface.

35. (Original) The paper towel of claim 32 wherein the cured binder composition on the first outer surface is different than the cured binder composition on the second outer surface and wherein the network of the cured binder composition on the first outer surface is deposited in a pattern that is different than the network of cured binder composition on the second outer surface.

36. (Original) The paper towel of claim 30 comprising two outer plies and at least one inner ply.

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37. (Original) The paper towel of claim 36 wherein at least one inner ply does not contain a surface-applied network of a cured binder composition.

38. (Currently Amended) A multi-ply paper towel comprising two outer plies, each of which has an outer surface and an inner surface, wherein both inner surfaces comprise a topically-applied network of a cured binder composition resulting essentially from the cross-linking reaction of an epoxy-reactive polymer and an epoxy-functional polymer having about 10 or more pendant epoxy moieties, wherein the amount of the epoxy-functional polymer relative to the amount of the epoxy-reactive polymer is from about 0.5 to about 200 dry weight percent.

39. (Original) The paper towel of claim 38 consisting of two plies and having a first inner surface and a second inner surface.

40. (Original) The paper towel of claim 39 wherein both inner surfaces comprise a topically-applied network of a cured binder composition.

41. (Original) The paper towel of claim 40 wherein the cured binder composition on the first inner surface is different than the cured binder composition on the second inner surface.

42. (Original) The paper towel of claim 40 wherein the network of the cured binder composition on the first inner surface is deposited in a pattern that is different than the network of the cured binder composition on the second inner surface.

43. (Original) The paper towel of claim 40 wherein the cured binder composition on the first inner surface is different than the cured binder composition on the second inner surface and wherein the network of the cured binder composition on the first inner surface is deposited in a pattern that is different than the network of cured binder composition on the second inner surface.

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44. (Currently Amended) The paper towel of claim ~~39~~ 38 comprising two outer plies and at least one inner ply.

45. (Original) The paper towel of claim 44 wherein at least one inner ply does not contain a surface-applied network of a cured binder composition.

46.- 53. (Canceled)

54. (New) A fibrous sheet having first and second outer surfaces, wherein at least one outer surface comprises a topically-applied network of a cured binder composition resulting from the cross-linking reaction of an epoxy-reactive polymer and an epoxy-functional polymer, wherein the epoxy-reactive polymer contains pendant epoxy-reactive functional moieties selected from the group consisting of carboxyl groups, anhydrides, phenolic resins, isocyanates, polymercaptans and alcohols.

55. (New) The fibrous sheet of claim 54 wherein the epoxy-reactive polymer contains pendant carboxyl groups.

56. (New) The fibrous sheet of claim 54 wherein the epoxy-reactive polymer is a carboxylated vinyl acetate-ethylene terpolymer emulsion.

57. (New) The fibrous sheet of claim 54 wherein the epoxy-reactive polymer is a carboxylated acrylic polymer emulsion.

58. (New) The fibrous sheet of claim 54 wherein the epoxy-functional polymer is water-soluble poly(methyldiallylamine)-epichlorohydrin resin.

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59. (New) A fibrous sheet having first and second outer surfaces, wherein at least one outer surface comprises a topically-applied network of a cured binder composition resulting from the cross-linking reaction of an epoxy-reactive polymer and an epoxy-functional polymer having about 10 or more pendant epoxy moieties, wherein the amount of the epoxy-functional polymer relative to the amount of the epoxy-reactive polymer is from about 0.5 to about 200 dry weight percent.

60. (New) The fibrous sheet of claim 59 wherein the number of pendant epoxy moieties is from about 10 to about 2000.

61. (New) The fibrous sheet of claim 59 wherein the number of pendant epoxy moieties is from about 50 to about 1000.

62. (New) The fibrous sheet of claim 59 wherein the epoxy-functional polymer is a poly(methyldiallylamine)-epichlorohydrin resin.